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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/687,670	10/20/2003	Ching-Pin Wang	WANG3202/EM	9342
23364	7590	06/07/2006	EXAMINER	LUI, DONNA V
BACON & THOMAS, PLLC 625 SLATERS LANE FOURTH FLOOR ALEXANDRIA, VA 22314			ART UNIT	PAPER NUMBER
			2629	

DATE MAILED: 06/07/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	10/687,670	WANG ET AL.	
	<b>Examiner</b>	<b>Art Unit</b>	
	Donna V. Lui	2629	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) Responsive to communication(s) filed on 20 October 2003.
- 2a) This action is FINAL.                    2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) Claim(s) 1-7 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) Claim(s) \_\_\_\_\_ is/are allowed.
- 6) Claim(s) 1-7 is/are rejected.
- 7) Claim(s) \_\_\_\_\_ is/are objected to.
- 8) Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on \_\_\_\_\_ is/are: a) accepted or b) objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) All    b) Some \* c) None of:
1. Certified copies of the priority documents have been received.
  2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)                     |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                    | Paper No(s)/Mail Date. _____.   |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____. | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
|   | 6) <input type="checkbox"/> Other: _____.                                   |

**DETAILED ACTION**

***Priority***

1. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

***Inventorship***

2. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. **Claims 1, and 3-7** are rejected under 35 U.S.C. 103(a) as being unpatentable over Son (Pub. No.: US 2002/0080121 A1).

With respect to Claim 1, Son teaches an optical input device (*See figure 6; [0033]*) capable of determining properties of a reflective plane (*28: surface; [0037]*), comprising: a light device (*24: light source*), to project an incident light onto a reflective plane (*28: surface; [0037]*); a first photosensor (*See figures 7 and 8, first photosensor is equivalent to first sensor; note that the structure of figures 7 and 8 are equivalent to that of figure 6 except that figure 6 has the optical mouse operating on a glass surface*), to receive diffusing light produced on the reflective plane by the incident light, compute a total diffusing light and accordingly determine unevenness and micro-scagginess of the reflective plane to find distance and direction moved by the optical input device (*[0017], unevenness and micro-scagginess is equivalent to irregularly reflected light*); and a second photosensor (*See figures 7 and 8, second photosensor is equivalent to second sensor*), to sense reflecting light produced on the reflective plane by the incident light (*[0039], lines 3-9*). Son does not mention a microprocessor (*See figure 6, 27: lens integrated circuit (IC); [0035], lines 5-7*), to compute a value of transmitting light produced when the incident light passes through the reflective plane and accordingly determines properties of the reflective plane according to values of the total diffusing light, the reflecting light and the incident light. However, Son does teach a second light receiving lens for condensing light that is totally reflected by the surface (*[0039], lines 3-9*). Figure 8 shows light diffused by the LED, incident on the light-emitting lens and then transmitted through the glass and totally reflected by the surface. It would have been obvious for a person of ordinary skill in the art at the time the invention was made to use a microprocessor to compute a value of transmitting light produced when the incident light passes through the reflective plane and accordingly determines properties of the reflective plane according to values of the total diffusing light, the reflecting light and the

incident light, to the optical input device of Son, for the advantage of reducing circuit size because microprocessors are small in size and therefore requires less circuitry, having low power consumption and flexibility.

With respect to **Claim 3**, Son teaches the optical input device as claimed in claim 1, wherein the optical input device is an optical mouse (*[0033]*).

With respect to **Claim 4**, Son teaches the optical input device as claimed in claim 3, wherein the optical input device has an opening in a bottom of the optical input device such that the incident light is projected to the reflective plane through the opening (*See figure 6, where the optical mouse is positioned on a glass surface (29), the opening is shown as the space between two horizontal bars that has light being diffused, transmitted and reflected*).

With respect to **Claim 5**, Son teaches the optical input device as claimed in claim 4, wherein the first photosensor is disposed above the opening (*See figure 6, where the first photosensor (rectangular block on left side of element 27) is positioned above the first lens (25 on left) which is positioned above the opening*).

With respect to **Claim 6**, Son teaches the optical input device as claimed in claim 1, wherein the second photosensor (*See figure 7; second sensor*) is disposed in a path corresponding to the reflecting light projected by the light device.

With respect to Claim 7, Son teaches the optical input device as claimed in claim 1, wherein the light device is a light emitting diode ([0006]). Although Son does not mention that the light device is a light emitting diode die, it would have been obvious for a person of ordinary skill in the art to use a light emitting diode die, to the optical input device of Son, so as to increase output power and electrical efficiency.

5. Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over Son in view of Applicant Admitted Prior Art (herein after referred to as “AAPA”).

With respect to Claim 2, note the above discussion of the optical input device as claimed in claim 1. Son does not mention that the microprocessor computes the value of transmitting light based on the following equation:  $R_r = I - R_1 - f(L)$ , where  $R_r$  is the transmitting light,  $I$  is the incident light,  $R_1$  is the reflecting light, and  $f(L)$  is the total diffusing light.

The applicant admits that according to the law of energy conservation, the microprocessor computes the energy of transmitting light  $R_r$  by the following equation:  $R_r = I - R_1 - f(L)$ , where  $R_r$  is the transmitting light,  $I$  is the incident light,  $R_1$  is the reflecting light, and  $f(L)$  is the total diffusing light ([0015]-[0016]).

It would have been obvious for a person of ordinary skill in the art at the time the invention was made to have the microprocessor use the equation:  $R_r = I - R_1 - f(L)$  for computing the value of transmitting light, to the optical input device of Son, so as to abide by the laws of physics and to increase sensor detection.

***Conclusion***

6. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Gordon et al. (Pub. No.: Us 2005/0231483 A1) is cited to teach an optical mouse operating on a micro textured surface.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Donna V. Lui whose telephone number is (571) 272-4920. The examiner can normally be reached on Monday through Friday 8:30 a.m. - 5:00 p.m..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Amr Awad can be reached on (571)272-7764. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Donna V Lui

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Examiner  
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Amare Mengistu  
Primary Examiner